

**WHAT IS CLAIMED IS:**

1. A lithium electrochemical cell, comprising:  
an electrolyte comprising:  
a mixture of solvents comprising:  
propylene carbonate;  
dimethoxyethane; and  
a salt mixture comprising:  
lithium trifluoromethanesulfonate; and  
lithium trifluoromethanesulfonimide,  
wherein the cell contains less than 1500 ppm by weight of sodium.
2. The cell of claim 1, wherein the cell contains less than 1200 ppm by weight of sodium.
3. The cell of claim 1, wherein the cell contains less than 1000 ppm by weight of sodium.
4. The cell of claim 1, wherein the cell contains less than 800 ppm by weight of sodium.
5. The cell of claim 1, wherein the cell contains less than 600 ppm by weight of sodium.
6. The cell of claim 1, wherein the mixture of solvents comprises:  
40-80% by weight of dimethoxyethane; and  
20-60% by weight of propylene carbonate; and  
the salt mixture has a concentration between 0.4 M and 1.2 M in the mixture of solvents.
7. The cell of claim 6, wherein the mixture of solvents comprises:  
50-75% by weight of dimethoxyethane; and

25-50% by weight of propylene carbonate.

8. A lithium electrochemical cell, comprising:

an electrolyte comprising:

a mixture of solvents comprising:

ethylene carbonate;

propylene carbonate; and

dimethoxyethane; and

a salt mixture comprising:

lithium trifluoromethanesulfonate; and

lithium trifluoromethanesulfonimide,

wherein the cell contains less than 1500 ppm by weight of sodium.

9. The cell of claim 8, wherein the cell contains less than 1200 ppm by weight of sodium.

10. The cell of claim 8, wherein the cell contains less than 1000 ppm by weight of sodium.

11. The cell of claim 8, wherein the cell contains less than 800 ppm by weight of sodium.

12. The cell of claim 8, wherein the cell contains less than 600 ppm by weight of sodium.

13. The cell of claim 8, wherein the mixture of solvents comprises:  
less than 30% by weight of ethylene carbonate;  
40-85% by weight of dimethoxyethane; and  
the salt mixture has a concentration between 0.4 M and 1.2 M in the mixture of solvents.

14. The cell of claim 13, wherein the mixture of solvents comprises:  
10-20% by weight of ethylene carbonate;  
50-70% by weight of dimethoxyethane.
15. The cell of claim 14, comprising less than 500 ppm by weight of sodium.
16. The cell of claim 13, wherein the mixture of solvents comprises:  
5-15% by weight of ethylene carbonate;  
70-80% by weight of dimethoxyethane; and  
10-20% by weight of propylene carbonate.
17. The cell of claim 16, comprising less than 500 ppm by weight of sodium.